

CLAIMS

1. A method for assisting the passage of an entity (10) through successive zones (Zn to Z1) to a destination (40); including the steps of:

5 associating an identifier with said entity;

creating a plurality of required incidents for said entity, each required incident having a place reference and a time reference associated with it, the required incidents including a final incident for which the place reference is the destination and the time reference is a predetermined time;

at intervals, detecting the presence of said entity in one of said zones and the time of said presence, thereby generating a match;

15 registering correspondences between the matches thus-generated and said required incidents; and

generating an alert for the entity when the time reference for a required incident is reached and that incident does not have a corresponding match.

20 2. A method according to claim 1, wherein the entity is a person.

3. A method according to claim 1, wherein the entity is an item of luggage.

25 4. A method according to any one of claims 1 to 3 wherein a plurality of said zones (Zn to Z1) are areas within a travel interchange.

5. A method according to claim 4 wherein the travel interchange is any one the group comprising an airport, a shipping port, a bus station or a railway station.

6. A method according to any one of the previous claims, wherein the destination (40) is a departure gate.

7. A method according to any one of claims 4 to 6 wherein at least one zone is outside the interchange.

5 8. A method according to any one of the previous claims, wherein the identifier is a wireless identification tag.

9. A method according to claim 8 wherein the tag is a passive tag and is energised by a transmitted signal.

10 10. A method according to any one of the previous claims wherein there are a plurality of entities, and at least a pair of those entities are associated with each other.

11. A method according to claim 8 wherein the pair of entities comprise an item of luggage and a person.

15 12. A method according to any one of the previous claims wherein the step of generating an alert includes broadcasting a message.

13. A method according to any one of the previous claims wherein the step of generating an alert includes sending an electronic message.

20 14. A method according to claim 13 wherein the electronic message is one or more of the group comprising an e-mail, a text message (SMS) or multi-media message (MMS) to a mobile phone, a voice message and a pager message.

25 15. A method according to any one of the previous claims wherein the step of generating the alert uses stored details about the entity.

16. A method according to any one of the previous claims, further including the step of adjusting the time reference of required incidents in response to a change in local conditions.

5 17. A method according to any one of the previous claims wherein the step of creating a plurality of required incidents creates the time references for those required incidents based on data about the entity.

10 18. A method according to any one of the preceding claims wherein at least one of the required incidents also includes data about the entity with which it is associated.

19. A method according to any one of the preceding claims further including the step of storing information regarding said required incidents on said identifier.

15 20. A method according to any one of the preceding claims further including the step of storing information regarding the entity on said identifier.

20 21. A method according to claim 19 or claim 20 further including the step of updating the information stored on the identifier as the entity passes through said zones.

22. A method according to any one of the preceding claims wherein the step of detecting is only carried out at defined locations.

25 23. A method according to claim 22 wherein the defined locations comprise one or more of the group comprising a check-in, a passport control, a metal detector, an X-ray machine and a departure gate.

24. A method according to claim 23 wherein the defined locations comprise, in sequence, a check-in, a passport control, a metal detector and a departure gate.

5 25. A method according to any one of claims 22 to 24 wherein at least one of said defined locations is an area through which substantially every entity must pass in order to move between zones.

10 26. A method according to claim 25 wherein at least one of said defined locations is an area through which every entity must pass in order to reach a destination.

15 27. A method according to anyone of the preceding claims wherein the step of detecting is carried out at locations comprising any one of the group comprising a retail entrance or exit, a toilet or rest-room entrance and a restricted area entrance.

28. A method according to claim 27 wherein data regarding usage of the facility where the step of detecting is carried out is stored and analysed.

20 29. A method according to any one of the preceding claims wherein the method comprises the further steps of:

setting a limit for the number of people permitted in at least one of said zones;

counting the number of people in said zone;

comparing said number to said limit; and

25 creating a signal when the number exceeds said limit or when the number approaches said limit to enable restriction of the number of people moving into said zone.

30. A method according to any one of the preceding claims wherein the method comprises the further steps of:

setting a limit for the number of people permitted in
at least one of said zones;

counting the number of people in said zone;

comparing the number to said limit; and

5 generating an alert when the number exceeds said limit
or when the number approaches said limit to increase the
number of people moving out of said zone.

31. A method according to claim 29 or claim 30, further
including the step of adjusting said limit over the course
10 of time.

32. A method according to any one of the preceding claims
wherein the step of detecting is only carried out in
particular areas at predetermined times.

33. A method according to any one of the preceding claims
15 further including the step of analysing said matches.

34. A method according to claim 33 further including the
step of adjusting one or more of said required incidents
according to the outcome of said analysis.

35. A method according to claim 34 wherein the step of
20 adjusting includes adjusting the time reference of one or
more of said required incidents according to the outcome of
said analysis.

36. A method according to claim 34 or claim 35 wherein the
step of adjusting includes adjusting the place reference of
25 one or more of said required incidents according to the
outcome of said analysis.

37. A method according to any one of the preceding claims
further including the step of detecting the passage of a
person through a defined area using secondary detection

means and matching each such passage with a detected passage of an identifier through the same area, wherein when the passage of a person is detected without a corresponding detected passage of an identifier, an alert is generated.

38. A method according to claim 37 wherein the secondary detection means is any one of the group comprising an infra-red detector, a video sensor a light beam or a mechanical sensor.

39. A system for assisting the passage of an entity (10) through a plurality of successive zones (Z1 to Zn) to a destination (40), the system including:

an identifier for said entity;

storage means (55) for storing a plurality of required incidents for said entity, each required incident having a place reference and a time reference associated with it, the required incidents including a final incident for which the place reference is the destination and the time reference is a predetermined time;

detection means (20) for detecting, at intervals, the presence of said entity in one of said zones (Z1 to Zn) and the time of said presence, thereby generating a match;

means (50) for registering correspondences between the matches thus-generated and said required incidents; and

alerting means (58, 59) for generating an alert for the entity when the time reference for a required incident is reached and that incident does not have a corresponding match.

40. A system according to claim 39 wherein a plurality of said zones (Z1 to Zn) are areas within a transportation travel interchange.

41. A system according to claim 39 or 40 wherein the destination (40) is the departure gate of a travel interchange.

5 42. A system according to claim 40 or 41 wherein at least one zone is outside the interchange.

43. A system according to any one of claims 39 to 42 wherein the identifier is a wireless identification tag.

44. A system according to claim 39 wherein the tag is a passive tag and is energised by a transmitted signal.

10 45. A system according to claim 43 or 44 wherein the detecting means (20) are radio sensors.

15 46. A system according to any one of claims 39 to 45 wherein the detecting means (20) are also able to determine the separation between the detecting means and an identifier.

47. A system according to any one of claims 39 to 46 wherein the detecting means can determine the direction of the identifier from the detecting means.

20 48. A system according to any one of claims 39 to 47 wherein a plurality of sensors are arranged close to boundary between two zones in such a way as to provide unconditional determination of which zone the identifier is in.

25 49. A system according to claim 48 wherein two rows of sensors are provided, one on either side of the boundary.

50. A system according to claim 48 or claim 49 wherein further physical arrangements are provided which encourage

or force the entity to move in a particular direction, or along a particular path between the zones, or prevent return from a successive zone to an earlier zone.

51. A system according to any one of claims 48 to 50
5 wherein at least one of said zones is a choke point.

52. A system according to any one of claims 39 to 51 wherein the alerting means includes a broadcast system (59).

53. A system according to any one of claims 39 to 52
10 wherein the alerting means includes an electronic messaging system.

54. A system according to any one of claims 39 to 53 wherein the storage means (55) is part of a digital . computer.

15 55. A system according to any one of claims 39 to 54 wherein the identifier is capable of storing information.

56. A system according to claim 55 wherein the information stored on said identifier is capable of being updated by interaction with one or more of said detection means.

20 57. A system according to any one of claims 39 to 56 wherein at least one detecting means is located at a choke point through which substantially every entity has to pass.

58. A system according to claim 57 wherein at least one detecting means is located at a choke point through which
25 every entity has to pass.

59. A system according to any one of claims 39 to 58 further including means for altering properties of said required incidents depending on inputs to the system.

5 60. A system according to any one of claims 39 to 59 further including secondary detection means for detecting the passage of a person through a defined area; means for registering correspondence between each such passage and a passage of an identifier detected by detection means (20); and alerting means for generating an alert when the passage
10 of a person is detected by said secondary detection means without a corresponding passage of an identifier being detected.

61. A system according to claim 60 wherein said secondary detection means is any one of the group comprising an
15 infra-red detector, a video sensor, a light beam or a mechanical sensor.

62. A system according to any one of claims 39 to 61 further comprising:

20 storage means for storing a limit value for the number of people permitted in at least one of said zones; and means for monitoring the total number of people in said zone; for comparing said total number to said limit value; and for creating a signal which restricts the number of people moving into said zone when the total number
25 exceeds said limit, or when the total number approaches said limit.

63. A system according to any one of claims 39 to 62 further comprising:

30 storage means for storing a limit value for the number of people permitted in at least one of said zones; and

means for monitoring the total number of people in said zone; for comparing said total number to said limit value; and for generating an alert to increase the number of people moving out of said zone when the total number exceeds said limit, or when the total number approaches said limit.

64. A system according to claim 62 or claim 63, wherein the limit is adjusted over time.

65. A computer program which, when executed by a computer, performs the method of any one of claims 1 to 38.

66. A computer program product containing a computer program according to claim 65.

67. A method of assisting the passage of an entity to a destination substantially as herein described or as illustrated in the accompanying figures.

68. A system for assisting the passage of an entity to a destination substantially as herein described or as illustrated in the accompanying figures.